

**E-4 LEVEL SPREADERS****PURPOSE & APPLICATIONS**

A level spreader is an outlet constructed at zero grade across the slope consisting of a vegetated or mechanical structure used to disperse or "spread" concentrated flow thinly over a receiving area. Its purpose is to spread collected water over a wide enough area so that erosion of the receiving area does not result. It can reduce erosion and the movement of sediment. An additional benefit of a level spreader is to remove other pollutants from runoff by filtration, infiltration, absorption, adsorption, decomposition, and volatilization.

This practice applies:

- Where concentrated water is dispersed within wooded buffers or on fields adjacent to streams, ponds, and lakes; and
- In areas requiring a filter strip such as a buffer to treat runoff.

This practice shall not be used:

- Where drainage areas above it are greater than 10 acres. For greater drainage areas, use vegetated waterways, lined waterways, or grade control structures.
- Where the water discharge will cross an adjoining property line unless it can be intercepted by a stable drainageway capable of handling the added volume.

**CONSIDERATIONS**

- A level spreader must be installed correctly with 0% grade on the spreader lip to ensure a uniform distribution of flow; otherwise water will channelize below the structure and become a source of erosion.
- Consider the time of year available for proper establishment of vegetation prior to construction of the level spreader. If a grass cover needs to be installed in the receiving area, construction will be limited to the growing season. Final seeding should be completed by September 1. Otherwise, refer to the OVERWINTER STABILIZATION AND CONSTRUCTION BMP.
- Stable receiving swales should exist below the receiving area as concentrated flow can be expected to start occurring within about 300 feet. Evaluate slopes and soil material, vegetative species and their condition on the receiving area before constructing a level spreader.
- Provisions for mowing and otherwise managing the vegetation on the receiving area shall be planned to maintain the effectiveness of the filter area.

**SPECIFICATIONS****Design Criteria**

Refer to detail drawings found at the back of this section for the proper design of a level spreader.

**Capacity:** The capacity of each level spreader shall be based on the allowable velocity of the soil. The minimum length shall be 12 feet. Typically, a level spreader should be sized to transfer 0.25 cfs per linear foot of spreader during the 10-year storm.

**Receiving Area:** Each level spreader shall have a vegetated receiving area with the capacity to pass the flow without erosion. The receiving area shall be stable prior to the construction of the level spreader.

The receiving area shall have a regular topography to prevent undue flow concentration before entering a stable watercourse. If the receiving area is not presently stable, then the receiving area shall be stabilized according to the PERMANENT VEGETATION BMP prior to the level spreader being built. This will limit construction to the growing season.

**Approach Velocity:** The flow area upstream of the level spreader shall be sufficient to ensure a low approach velocity to the level "lip." The minimum flow area of level spreader shall be equal to four times the flow of the delivery channel. The lip shall be installed at a 0% grade (level).

### **Construction Specifications**

The receiving area below the level spreader shall be protected from harm during construction. Minor disturbed areas shall be stabilized with vegetative measures. A temporary stormwater diversion may be necessary until the level spreader has fully stabilized.

Level spreaders must blend smoothly into the downstream receiving area without any sharp drops or irregularities, to avoid channelization, turbulence and hydraulic "jumps."

Level spreaders shall be constructed on undisturbed soil where possible. If fill is used, it shall be constructed of material compacted to 95% of standard proctor test levels prior to seeding for that area not considered the seedbed.

### **MAINTENANCE**

After construction and until fully revegetated, the level spreaders need to be carefully inspected for any signs of channelization and immediately repaired. The structure will fail if water exits from it in channelized flow. Vegetated level spreaders may require periodic mowing. Spreaders constructed of wood, asphalt, stone or concrete curbing also require periodic inspection to check for damage and to be repaired as needed. Over time, the level spreader may fill with sediment and will need to be cleaned out to maintain its capacity.



